ABSTRACT

In obtaining a photomask blank 1 by disposing a sputtering target in a vacuum chamber and forming thin films 3, 4, and 5 with a three-layer construction of CrN/CrC/CrON over a transparent substrate 2 by reactive sputtering, the thin films are formed in a mixed gas atmosphere containing helium, and the helium gas flux in the mixed gas is controlled such that the crystal grain diameter of the CrC thin film, which is the thickest film, will be 3 to 7 nm. This yields a photomask blank having thin films with low film stress, having good film quality, and which can be produced at a high yield in mass production.